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By a careful comparison of the discoveries made in the mounds of this Kanawha group with those made in the mounds of the Cherokee section, the reader will observe some striking similarities which cannot be easily accounted for upon any other theory than that of tribal identity or intimate relations of the peoples of the two sections. It is true that we find enclosures in the former locality, and none in the latter, and it is also true that we notice other dissimilarities; but some changes in customs and works are to be expected where there is a change of location. Necessities, materials, and environments are different, and bring about modifications of customs. These changes are apparent in all parts of the mound area, even where there are good reasons for attributing the works to the same people: in fact, they are sometimes found in a single group.

It is true, we cannot assert positively that the little conical clay vaults above described, except in one or two cases, were depositories of the dead, as were the conical boulder vaults of North Carolina and East Tennessee; yet the very marked similarity in form and size, and correspondence in their arrangement in the tumuli, justify the belief that there was a relationship between the authors of the works of the two sections. Not only are they similar in size and form, but in both localities pits were dug in the original soil, the floor was covered with coals or ashes in some cases, and the vaults built on these and the mound heaped over them. It should also be borne in mind that vaults of this kind, arranged as here stated, have so far been found only in these two sections. The arrangement in a circle found in the mound in Sullivan County, Tenn., has its parallel in one of the mounds of the Kanawha group. In one was also found the pipe shown in Fig. 8; in the other, that shown in Fig. 5.

In further corroboration of the theory of relationship between the people of the two sections, may be mentioned the fact that in the mounds of both we find the peculiar basin-shaped beds placed in series one above another.

CYRUS THOMAS.

[To be continued.]

NOTES AND NEWS.

LIEUT. J. P. FINLEY, of the United States Signal Corps, has gone to San Francisco to take charge of the Pacific Coast Weather Service.

—Professor John C. Branner, State geologist of Arkansas, delivered a course of lectures on geology to the senior and junior classes at the Rose Polytechnic Institute, Terre Haute, Ind., week before last.

—Dr. William K. Newton of Paterson has resigned as dairy and food commissioner of New Jersey. This was done two months since to the State Board of Health, which, on the 6th of May, appointed one of Dr. Newton's assistants, Mr. George W. McGuire of Trenton, to fill the vacancy.

—We learn from *Nature* that Professor Von Nordenskiöld lately announced to the Stockholm Academy of Sciences that a scientific expedition would start during the summer for Spitzbergen. Among the party will be his son, M. G. Nordenskiöld, and MM. Klinckowström and Bahaman. The expenses of the expedition will be defrayed by Baron Dickson and M. F. Beijer, the publisher.

—A statistical investigation of lightning-strokes in central Germany, covering a period of twenty-six years, has been carried out by Herr Kastner. According to *Nature*, the number of cases has increased about 129 per cent, and last year (1889) it amounted to 1,145. The author distinguishes four thunder-storm paths.

The starting-points of all these are in hills, and in their course the woodless districts and flat country, the river-valleys, and low meadow-ground about lakes, seem specially liable, while the wooded and hilly parts generally escape. The hottest months (June, and especially July), and the hottest hours of the day, or those immediately following them (3 to 4 P.M.), show the most lightning-strokes.

—We learn from *Humboldt* that in connection with the tenth international medical congress, to be held this year in Berlin from Aug. 4 to Aug. 9, there is to be an international medico-scientific exhibition. The following kinds of objects will be exhibited: new or improved scientific instruments and apparatus for biological and especially medical purposes, including apparatus for photography and spectrum analysis so far as they are of service to medicine; new pharmaceutical and chemical stuffs and preparations; new or improved instruments for operative purposes of medicine, including electrotherapy; new plans and models of hospitals, convalescent homes, disinfection arrangements, baths, etc.; new arrangements for care of the sick, including means of transport, and baths for invalids; newest apparatus for hygienic purposes, etc. Communications (marked "Ausstellungsangelegenheit") should be sent to the office of the congress, Dr. Lassar, Berlin, N.W., Karlstrasse 19.

—The daily and yearly variation, and the distribution, of wind-velocities in the Russian Empire have been fully investigated by Kiersnowski, says *Nature*. The highest velocities (mean 6.3 metres per second) occur in the Baltic provinces. On the White Sea, on the Caspian, in the region of the North Russian lakes, and on the Steppe, the values are also high; in the forest region and the Caucasus they are low. Towards the interior of Asia the velocity decreases, and in Transbaikalia is the minimum (1.5 metres per second). Farther east, towards the Pacific, the velocity increases. In the annual period, the maximum is pretty uniformly in winter, the minimum in summer. A maximum in spring, and a minimum in summer or autumn, are peculiar to the Caspian region, the Ural, and West Siberia, with Central Asia. In eastern Siberia the minimum is in winter. The daily variation shows distinctly the connection with cloudiness. The greatest amplitude occurs in the brighter part of the year: in East Siberia in winter, and in the rest of the country in summer. In general, the amplitude increases regularly with the clearness of the sky eastward, and on land it is greater than on the sea.

—In seven years, experiments at the Ohio Agricultural Station with deep and shallow planting of corn show an advantage in favor of planting one inch rather than two inches deep, but indicate that in dry seasons it may be better to plant two inches deep. The greatest amount of marketable corn has been produced where the stalks averaged twelve inches apart. The variations in yield were slight, whether planted one grain every twelve inches, two every twenty-four, three every thirty-six, or four every forty-eight inches. Three years' trial has not indicated any marked differences in the reproductive qualities of corn from the butts, middles, or tips of the ears. If there is any variation, it is in favor of middles and tips, and against the butts. The experiments of 1888 and 1889 indicate that corn should be cultivated more frequently in a dry season than in a wet or ordinary one. The average results of two years' experiments favor deep cultivation rather than shallow. The implements used were the harrow and cultivator for shallow tillage, and the double shovel for deep. This work was under the care of J. Fremont Hickman.

—The papers read at the May meeting of the Royal Society of Canada included, in the section on mathematical, physical, and chemical sciences, "The Unit Measure of Time," by Dr. Sandford Fleming, president of the section; "Tidal Observations in Canadian Waters, the Present Condition of the Question," by Professor A. Johnson, McGill University, Montreal; "Sunspots observed at McGill College since June 1, 1888," by Professor C. H. McLeod of McGill University; "Notes on Cream-of-Tartar Analysis," and "Notes on Baking-Powder Analysis," by A. McGill; "Milk Analysis by the Asbestos Method," by Frank T. Shutt; "On a Peculiar Form of Metallic Iron found in Huronian Quartzite on the North Shore of St. Joseph Island, Lake Huron, Ontario," by G. Chr.

Hoffmann; "Drift Rocks of Central Ontario," by Professor A. P. Coleman of Victoria University; and "On the Density of Weak Aqueous Solutions of Certain Sulphates," and "On a Test of Ewing and MacGregor's Method of Measuring the Electrical Resistance of Electrolytes," by Professor J. G. MacGregor. Those in the section on geological and biological sciences included the presidential address, "Mesozoic and Tertiary History of the Rocky Mountain Region of Canada," and "Glacial History of the Rocky Mountain Region in Canada," by George M. Dawson; "Foraminifera and other Minute Organisms from the Cretaceous of Manitoba," by J. B. Tyrrell; "On Fossil Plants from the Similkameen River and other Places in the Southern Interior of British Columbia," by Sir William Dawson; "Descriptions of Some New or Previously Unrecorded Species of Brachiopoda and Mollusca from the Devonian Rocks of Manitoba," and "The Marine Invertebrata of the River and Gulf of the St. Lawrence," by J. F. Whiteaves; "Notes Stratigraphiques sur le Rocher de Québec," par l'Abbé Laffamme; "Illustrations of the Fauna of the St. John Group, No. V.," by G. F. Matthew; "The Evidence of a Nova Scotia Carboniferous Conglomerate," by E. Gilpin; and "Southern Invertebrates on the Shores of Acadia," by W. F. Ganong.

—The fourth international congress on inland navigation will be held in Manchester, England, on July 28 and following days. The objects of the congress are, to promote the improvement of inland navigation and of estuaries; to direct attention to the economical value of navigable water-ways; to examine, generally, technical questions relating to the construction and working of canals; to receive the report of the International Statistical Commission appointed at the last congress; and to take further steps towards the collection of statistics bearing on inland navigation. The three previous congresses were held respectively in Brussels, Vienna, and Frankfort-on-the-Main. It is intended to have an exhibition of plans, maps, and models relating to inland navigation. At the Frankfort congress a similar exhibition was held, the most valuable contributions coming from the German Government, who spent \$20,000 on their preparation. It is hoped that these plans and models may be available for re-exhibition in Manchester. All communications relating to the congress should be addressed to the secretary, at Lombard Chambers, 46 Brown Street, Manchester, England.

—According to a work recently published by one of the state foresters of Prussia, the entire forest area of Germany now amounts to 14,000,000 hectares (34,596,000 acres). Russia has 200,000,000 hectares (494,228,620 acres) of forests; Austria-Hungary, 19,000,000 hectares (46,952,000 acres); Sweden, 17,000,000 hectares (42,010,000 acres); France, 9,000,000 hectares (22,241,000 acres); Spain, 8,000,000 hectares (19,769,000 acres); Italy, 4,000,000 hectares (9,884,572 acres); and England, 2,471,000 acres. The United States commercial agent at Mayence says that the proportion of communal to state and crown forests in the different states of Germany is as follows: Prussia, 1,355,000 hectares of communal and 2,423,000 state forests; Bavaria, 388,000 and 941,000 respectively; Wurtemberg, 190,000 and 192,000; Hesse, 90,000 and 67,000; Baden, 259,000 and 93,000; and Alsace-Lorraine, 195,000 and 151,000 hectares. In Saxony and in the other states of the empire, with the exception of Saxe-Meiningen, about one-half of all the forests are state or communal property, considering the possessions of the crown as a species of state property; and these are all subject to a well-regulated permanent administration and supervision under state control, while the older forests in many of the states are not under any public control. It is stated, in the work referred to above, that there are 9,100,000 hectares (22,487,400 acres) of coniferous, and 4,800,000 hectares (11,800,000 acres) of foliaceous, trees in Germany. Of the coniferous trees, it is stated that a greater part are on a soil adapted only to such growth, and on which nothing else can be cultivated. Of the coniferous trees, 3,000,000 hectares (7,413,000 acres) are of the fir kind, and 6,000,000 hectares (14,826,800 acres) pines. The greater part of the pines are in the mountains, preponderating in the Hartz Mountains, the Riesengebirge, the Erzgebirge, in the Thuringian forests, in the Verm, in the Vosges Mountains, in the Black Forest, in the so-called Bavarian Alps, in the Bavarian

Forest, and in the Franconian, Jura, and Fichtel Mountains. The pines are mostly on level tracts, and more than half of them are on soil unfit for the successful cultivation of useful timber. The 4,800,000 hectares of foliaceous trees are principally made up of beeches.

—Dr. Max Buchner, who has spent a year and nine months in Australia, Japan, China, and Manila, has returned to Munich, Germany. He carried back a valuable scientific collection for the Ethnographical Museum, of which he is the director.

—An annual prize of fifty dollars, for a period of three years, has been offered by a member of the Baltimore bar to that member of the Johns Hopkins University who shall make the best contribution to institutional or legal history. The field is not restricted to American or English laws and institutions, but is extended to the history of early society. Papers should be handed to Dr. Herbert B. Adams before Feb. 1, 1891.

—The Draper medal was awarded to Professor H. A. Rowland by the National Academy of Sciences at its April meeting in Washington. The medal is given every two years for original investigations in the department of astronomical physics. Professor Rowland was awarded the medal for his work in spectrum analysis, the perfecting of diffraction gratings for producing spectra, and his investigations of the solar spectrum.

—In connection with the report of the United States Eclipse Expedition to West Africa, under the direction of Professor D. P. Todd, a work of very great importance to navigators is to be undertaken; namely, the preparation of a set of daily weather-maps of both oceans from October to May inclusive, the entire period of the cruise of the United States Steamship "Pensacola." The United States Hydrographic Office calls attention to the importance of this subject, and the exceptional opportunity that is presented for utilizing the data already at hand, together with such additional data as may be contributed for this purpose by various government offices and individual navigators. The scheme determined upon consists in the preparation of a weather-map for each day at noon, Greenwich mean time, from Oct. 1, 1889, to May 31, 1890, inclusive, for the entire area between latitude 70° north and 60° south, longitude 20° east and 100° west. In addition to the Greenwich noon observations that are kept regularly for the Hydrographic Office by nearly two thousand voluntary observers, it is earnestly desired that other navigators of these waters, within the limits of time and place mentioned above, forward to that office such data from their log-books as may be useful in this connection, selecting those observations that come nearest to noon, Greenwich mean time, and stating as many details as possible regarding wind, weather, state of the sea, and velocity and set of currents. Data from land stations are also very important, especially such as are not accessible in any published records. To make this great undertaking a success, however, there must be further and cordial co-operation among the nations interested in the meteorology of this vast area, and among navigators of every nationality. It has long been the desire of the Hydrographic Office to commence the publication of a pilot chart of the South Atlantic and west coast of South America, and the present undertaking will furnish an admirable basis for this work. The "Pilot Chart of the North Atlantic Ocean" has won a place for itself in the esteem of navigators generally, without regard to nationality, and it is intended to publish the result of the present investigation in such form, and with such wide distribution, as well to repay every one who contributes to its success. Reports handed to any United States consul, or to the commanding officer of any United States naval vessel, will be transmitted free of all expense to the observer, and in each case due credit will be given in the published report.

—A new catalogue of electrical testing apparatus has just been issued by James W. Queen & Co., Philadelphia. This catalogue is believed to be the most complete in its special field of any yet published in this country. We shall call attention in this and early issues to their new resistance-boxes, portable testing-pieces, and photometers for use in electric-light comparisons. The catalogue will be sent by the firm to any interested.